Last Time

- Finite State Machine Examples
- Bit manipulation in C

Today

- Midterm review
- One more Finite State Machine example
- Homework 4
- Project 2

Administrivia

- Midterm exam: Thursday
- Lab 2:
  - Part 1 due March 23rd
  - Part 2 due March 30th

Midterm Preparation

- Exam discussion on D2L
  - Post sample questions (and answers)
  - Some may appear on the exam
- Look to homework assignments and exams from last year (both the midterm and final) for the types of questions

Midterm Exam

- No books
- No electronic devices
- You may bring 1 page of **your own** notes
  - Double-sided

Digital Logic

- Basic gates
  - Truth table
  - Symbols used in circuit diagrams
  - NOT, AND, OR, NAND, NOR, XOR
  - Tristate buffers
- Boolean algebra
  - Notation
  - Precedence
  - Basic laws: associative, distributive, commutative
  - Demorgan's laws
  - Basic identities

Digital Logic

- Digital circuits
  - Cascading basic gates
  - Truth table to algebraic representation to circuit design
  - Multiplexers, demultiplexers
- Circuit reduction techniques
  - Algebraic manipulation
  - Karnaugh maps

Number Representations

- Conversion between binary and:
  - Decimal
  - Hexidecimal
- Bit-wise operations

Sequential Logic

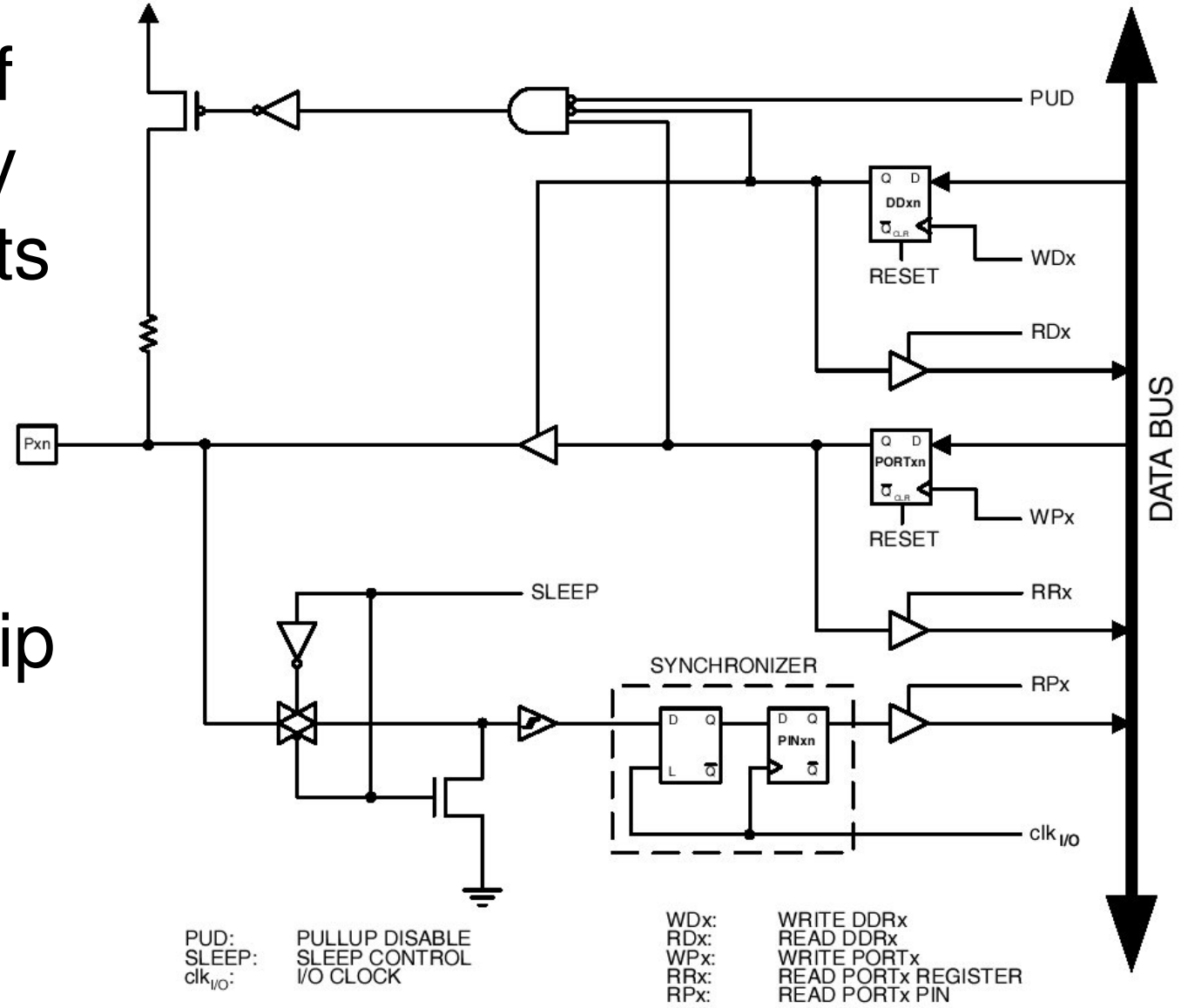
- Notation
  - Timing diagrams
- Flip flops (specifically, D)
  - Circuit analysis and design
- Relationship to finite state machines

Finite State Machines

- Definition
  - States
  - Events
  - Transition function
  - Outputs and output function
- State transition diagrams

Microcontroller I/O

- Function of the primary components
  - DDRB
  - PORTB
  - PINB
- Relationship to C code



Memory

- Components and behavior
- Types of memory
- Memory elements
- Primary I/O lines
  - Address
  - Data
  - Chip select
  - R/W
  - Clock